DATE: 05/15/2001

PATENT APPLICATION: US/09/740,288A TIME: 17:26:37 Input Set : A:\Pto.amc Output Set: N:\CRF3\05152001\I740288A.raw 3 <110> APPLICANT: Allen, Stephen Kinney, Anthony Miao, Guo-Hua 5 Orozco, Emil 6 8 <120> TITLE OF INVENTION: PLANT BIOTIN SYNTHASE 10 <130> FILE REFERENCE: BB1429 US NA 12 <140> CURRENT APPLICATION NUMBER: US 09/740288A 13 <141> CURRENT FILING DATE: 2000-12-19 15 <150> PRIOR APPLICATION NUMBER: US 60/172929 16 <151> PRIOR FILING DATE: 1999-12-21 18 <160> NUMBER OF SEQ ID NOS: 36 20 <170> SOFTWARE: Microsoft Office 97 23 <210> SEQ ID NO: 1 24 <211> LENGTH: 512 25 <212> TYPE: DNA 26 <213> ORGANISM: Hordeum vulgare 28 <220> FEATURE: 29 <221> NAME/KEY: Unsure 30 <222> LOCATION: (94)..(94) 31 <223> OTHER INFORMATION: n = A, C, G, or T 34 <220> FEATURE: 35 <221> NAME/KEY: Unsure 36 <222> LOCATION: (460)..(460) 37 <223> OTHER INFORMATION: n = A, C, G, or T 40 <220> FEATURE: 41 <221> NAME/KEY: Unsure 42 <222> LOCATION: (462)..(462) 43 <223> OTHER INFORMATION: n = A, C, G, or T46 <400> SEQUENCE: 1 60 47 caactccctc ggcagtatcg cctagtgcag cagcggctcc gttccggcca gctttgctcg W- $_{\mathcal{K}}>$ 48 cegageegge catgatgetg etgetegege geanettege teeegegtee ggteeceett 120 49 egecteegee gttagegeeg egecettete ateggtateg geggeegegg eggaggegga 180 240 50 egggeggtge gggaegggee eaggaaegae tggaeeegee eegagateea ggeeatetae 51 gacteceege teetegacet cetetteeae ggggeteaag teeataggaa tgtecataaa 300 52 tttagagaag tgcaacaatg cacacttctt tcaataaaga ctggtgggtg cagcgaagat 360 53 tgttcatact gcccacagtc ttcaagatac agtaccggat, tgaaggctga aaaattaatg 420 54 aagaaagatg ccgtcctaga agcagctaaa aaggcaaagn angctgggag cacccgattt 480 512 55 tgattggagc gatggagaga gacaattggc ag 58 <210> SEQ ID NO: 2 59 <211> LENGTH: 137 60 <212> TYPE: PRT 61 <213> ORGANISM: Hordeum vulgare 63 <220> FEATURE: 64 <221> NAME/KEY: UNSURE 65 <222> LOCATION: (131)..(131) 66 <223> OTHER INFORMATION: Xaa = any amino acid 69 <400> SEQUENCE: 2

RAW SEQUENCE LISTING

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Input Set : A:\Pto.amc

Output Set: N:\CRF3\05152001\I740288A.raw

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 74 Ala Ala Glu Ala Glu Arg Ala Val Arg Asp Gly Pro Arg Asn Asp Trp
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 76 Thr Arg Pro Glu Ile Gln Ala Ile Tyr Asp Ser Pro Leu Leu Asp Leu
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 80 Val Gln Gln Cys Thr Leu Leu Ser Ile Lys Thr Gly Gly Cys Ser Glu
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 82 Asp Cys Ser Tyr Cys Pro Gln Ser Ser Arg Tyr Ser Thr Gly Leu Lys
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128 egetgeteet ctatecettt eetgetgetg etactacett aagetateae tateatggee
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129 ttgatgctgc tagegegeaa eetgegetee egeeteegee eacegetege egeegeegeg
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130 gggttetegt eggeegegge ggaggeggag agggegatae gggaegggee geggaaegae
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131 tggagccggc ccgagatnca ngccgtctac gactcaccgc tcctcgacct cctctttcac
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TIME: 17:26:37

Input Set : A:\Pto.amc Output Set: N:\CRF3\05152001\I740288A.raw 132 ggggntcagt catcaagata caacactgga ttgaagggcc aaaaattgat gaacaaatat メ 133 gctgtcttgg gagcagcaaa aaaggnaaaa gagtctggga agcaaccgtt tttgcatggg 480 134 aactgcattg gagaaa 496 137 <210> SEQ ID NO: 4 138 <211> LENGTH: 102 139 <212> TYPE: PRT 140 <213> ORGANISM: Zea mays 142 <220> FEATURE: 143 <221> NAME/KEY: UNSURE 144 <222> LOCATION: (48)..(49) 145 <223> OTHER INFORMATION: Xaa = any amino acid 148 <220> FEATURE: 149 <221> NAME/KEY: UNSURE 150 <222> LOCATION: (64)..(64) 151 <223> OTHER INFORMATION: Xaa = any amino acid 154 <220> FEATURE: 155 <221> NAME/KEY: UNSURE 156 <222> LOCATION: (91)..(91) 157 <223> OTHER INFORMATION: Xaa = any amino acid 160 <400> SEQUENCE: 4 161 Met Ala Leu Met Leu Leu Ala Arg Asn Leu Arg Ser Arg Leu Arg Pro 163 Pro Leu Ala Ala Ala Gly Phe Ser Ser Ala Ala Glu Ala Glu 164 20 25 165 Arg Ala Ile Arg Asp Gly Pro Arg Asn Asp Trp Ser Arg Pro Glu Xaa 166 35 40 > 167 Xaa Ala Val Tyr Asp Ser Pro Leu Leu Asp Leu Leu Phe His Gly Xaa 168 55 169 Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Gly Gln Lys Leu Met Asn 70 75~ 171 Lys Tyr Ala Val Leu Gly Ala Ala Lys Lys Xaa Lys Glu Ser Gly Lys 173 Gln Pro Phe Leu His Gly 174 100 177 <210> SEQ ID NO: 5 178 <211> LENGTH: 497 179 <212> TYPE: DNA 180 <213> ORGANISM: Zea mays 182 <220> FEATURE: 183 <221> NAME/KEY: Unsure 184 <222> LOCATION: (192)..(192) 185 <223> OTHER INFORMATION: n = A, C, G, or T 188 <220> FEATURE: 189 <221> NAME/KEY: Unsure 190 <222> LOCATION: (460)..(460) 191 <223> OTHER INFORMATION: n = A, C, G, or T 194 <220> FEATURE: 195 <221> NAME/KEY: Unsure 196 <222> LOCATION: (463)..(463)

RAW SEQUENCE LISTING

PATENT APPLICATION: US/09/740,288A

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Input Set : A:\Pto.amc

Output Set: N:\CRF3\05152001\I740288A.raw

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-\Omega 216 egeegeegeg gngttetegt eggeegegge ggaggeggag agggegatae gggaegggee
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  256 Gln Val His Arg Asn Val His Xaa Ser Arg Glu Val Gln Gln Cys Thr
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   260 Pro Gln
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Input Set : A:\Pto.amc.

Output Set: N:\CRF3\05152001\I740288A.raw

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285 attggttgct gtaaaaggca cacctcttga ggaccagaag cctgtagaga tctgggaaat
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307 65
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310 Pro Gln Ser Ser Arg Tyr Asn Thr Gly Leu Lys Ala Gln Lys Leu Met
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312 Asn Lys Tyr Ala Val Leu Glu Ala Ala Lys Lys Ala Lys Glu Ser Gly
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314 Ser Thr Arg Phe Cys Met Gly Ala Ala Trp Arg Glu Thr Ile Gly Arg
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316 Lys Ser Asn Phe Asn Gln Ile Leu Glu Tyr Val Lys Glu Ile Arg Gly
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Please Note:

Use f n and/or Xaa have been detected in the Sequence Listing. Pl as revi w the Sequence Listing to ensure that a corresp nding explanation is presented in the <220> to <223> fields of each sequence which presents at least ne n or Xaa.

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VERIFICATION SUMMARY

PATENT APPLICATION: US/09/740,288A

DATE: 05/15/2001 TIME: 17:26:38

Input Set : A:\Pto.amc

Output Set: N:\CRF3\05152001\1740288A.raw

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L:86 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:2 L:126 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:131 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
L:132 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3
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L:165 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
L:167 \ M:341 \ W: \ (46) \ "n" \ or "Xaa" \ used, for SEQ ID#:4
L:171 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:4
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L:1517 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:36
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spectrally the broadband incoherent light to produce a plurality of narrowband incoherent lights, and multiplexes the upstream signal transmitted from the optical network units through the plurality of optical fibers.

- 49. (Previously Presented) The optical transmission system of claim 45, wherein the plurality of coherent light sources capable of lasing include Fabry-Perot laser diodes that emit wavelength-selective outputs locked by the narrow-band incoherent lights.
- 50. (Previously Presented) A passive optical network; comprising:

a remote node having a first demultiplexer to slice spectrally a broadband incoherent light to produce a plurality of narrow-band incoherent lights;

a central office including an incoherent light source that generates the broadband incoherent light, a second demultiplexer that receives and demultiplexes an upstream signal, and a plurality of receivers that are connected at the output ends of the second demultiplexer;

a plurality of optical network units that are connected to the remote

with a plurality of optical fibers, wherein the plurality of optical network units include coherent light sources capable of lasing that connect at the output ends of the first demultiplexer, and each coherent light source capable of lasing emits a wavelength-selective output locked by the narrow-band incoherent lights.

51. (Previously Presented) The passive optical network of claim 50, further comprising:

an optical circulator in the remote node to route the broadband incoherent light delivered from the central office through the optical fiber to the first demultiplexer and the upstream signal from the first demultiplexer to the central office, wherein the plurality of optical network units generate the upstream signal.

- 52. (Previously Presented) The passive optical network of claim 50, wherein two or more of the coherent light sources capable of lasing can be modulated directly.
- 53. (Previously Presented) A passive optical network, comprising:
 - a remote node that includes a first demultiplexer;
- a central office that includes a second demultiplexer, a plurality of receivers connected at the output ends of the second demultiplexer, and an incoherent light source that generates a broadband incoherent light having a bandwidth within the free spectral range (FSR) of the first demultiplexer;
 - a single optical fiber to connect the remote node with the central office;
- a plurality of optical network units that include at least one Fabry-Perot laser diode that emits a wavelength-selective output locked by an injected narrow-band incoherent light, and
- a plurality of optical fibers to connect the plurality of optical network units at the output ends of the first demultiplexer, wherein the first demultiplexer slices spectrally the broadband incoherent light to produce a plurality of narrow-band incoherent wavelengths of lights, and multiplexes output signals transmitted from the optical network units.
- 54. (Previously Presented) The passive optical network of claim 53, further comprising:
- an optical circulator that connects to the incoherent light source to route the broadband incoherent light to the optical fiber.
- 55. (Previously Presented) The passive optical network of claim 53, further comprising:
- an optical power splitter that connects to the incoherent light source to route the broadband incoherent light to the optical fiber.
- 56. (Previously Presented) A passive optical network, comprising:
 - a remote node that includes a first demultiplexer,
- a central office that includes an incoherent light source that generates a broadband incoherent light having a bandwidth within the free spectral

range (FSR) of the first demultiplexer, and a second demultiplexer that demultiplexes an upstream signal received from the first demultiplexer to a plurality of receivers coupled to the second demultiplexer, wherein the first demultiplexer slices spectrally the broadband incoherent light to produce a plurality of narrow-band incoherent lights;

a plurality of optical network units that include coherent light sources capable of lasing connected at the output ends of the first demultiplexer, which emit a wavelength-selective output locked by the narrow-band incoherent lights, wherein the first demultiplexer multiplexes the output signals transmitted from the coherent light sources capable of lasing; and

an optical power splitter to route the broadband incoherent light to the first demultiplexer and the upstream signal from the first demultiplexer to the second demultiplexer.